GEOGRAPHICAL NOTES.

BY

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INTERNATIONAL CONGRESS OF AMERICANISTS IN 1892. —The Ninth Meeting of the International Congress of Americanists will be held at the convent of Santa María de la Rábida, in the province of Huelva, Spain, during the week, 1–6 October, 1892, the place having been chosen by the Spanish Government, to which the International Congress, held at Paris in 1890, delegated the responsibility of selection.

Tickets of membership may be had by remitting twelve francs, with the name and address of the sender, to the *Secretario general, Justo Zaragoza, Ministerio de Ultramar, Madrid.*—Each member has the right of admission to the Congress and will receive, free of cost, all its publications.

Manuscripts of authors, who cannot be present at the Congress, must be sent in to the Secretary before August 1, 1892.

The programme (arranged by the Paris Congress) embraces the following divisions and subjects:

HISTORY AND GEOGRAPHY.

1. On the Name "America."

2. Latest Researches on the History and Voyages of Christopher Columbus.

3. Influence of the arrival of the Europeans on the

Organization of the Indian Communities in North America.

4. What modifications did contact with the European produce in the social and political organization of the populations of the Andine region? Density of the population before and after the Spanish Conquest.

5. Taking as terms of comparison the statistics collected by order of the Viceroys, and the latest enumerations made by the Peruvian Government, is it found that the law of gradual diminution of the native population, brought into contact with the whites, applies with equal rigor to Latin and to Anglo-Saxon America?

6. Do the latest discoveries made in the great cemeteries in the caves of the Amazon and the river Tocantins (Marajo islands, etc.), permit us to affirm the existence of a previous race, distinct from the present Indian, with a relatively advanced degree of civilization?

7. Study of cartographic documents, recently brought to light, relating to the discovery of America, and their proper place in the series to which they belong.

ARCHÆOLOGY.

1. Analogies which exist between the pre-Columbian civilizations and those of Asia (China, Japan, Cambodia, Malaysia, Chaldea and Assyria).

2. Statement of the most recent discoveries that have been made under the North American *mounds boulders*,* and the conclusions to be drawn with respect to the civilization of their builders.

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*These two English words, evidently misunderstood and meant for *mound builders*, have somewhat confused the sense of this passage, in the French as well as in the Spanish text.

3. What were the ancient populations of the Isthmus of Panama, to whom we are to refer the ceramic collections now existing at Yale College and the Smithsonian Institution, etc.?

4. What relation do the various potteries of America bear to each other?

ANTHROPOLOGY AND ETHNOGRAPHY.

1. Nomenclature of the peoples and tribes of America before the Conquest—Pre-Columbian ethnographic maps—Ethnic elements of the southern extremity of the American continent.

2. New discoveries relative to the primitive (*quaternary*, according to the French) American man.

3. Do craniological studies permit us to affirm that the present American races existed in America at the quaternary period (diluvium) and that the conformation of the cranium in those races was the same as that of the Indians now existing?

4. What are the first immigrations of foreign races into America, of which we have knowledge?

5. Penetration of African races into America, and especially in the south.

6. Do the Indians of America in general, and particularly those of the north-western coast, possess distinctive characteristics, which indicate affinity with Asiatic peoples?

7. Eskimos and their half-breeds.

8. Funeral rites in America before and after Columbus.

9. Figure-writing in America and its geographical distribution.

10. Ethnographic distribution and territorial pos-

sessions of the aboriginal nations or tribes of America, in the sixteenth century and at the present time.

LINGUISTICS AND PALÆOGRAPHY.

1. Principal linguistic families of the Amazon and Orinoco basins.

2. Differences between the languages of the coasts and those of the mountains, in Peru. Is there any analogy between the former and the tongues of Central America?

3. Do the Quichúa and the Aimará belong to the same family?

4. Do the tongues spoken on the western coast of America present any grammatical affinity with the Polynesian languages?

5. Is the composition by agglutination and the incorporation of the personal pronoun, or the object, common to the majority of the American languages?

6. Origin of the plural terminations in the Nahuatl and related tongues.

7. Persistence of the character and form of dialects in the languages spoken in America (Spanish, English, French, Portuguese and Dutch) by the descendants of the European colonists, according to the provinces from which these came.

8. Study of languages in process of formation in America.

Real Americanists must regret to see the reappearance, in this programme, of a subject which has tried the patience and the courtesy of so many Congresses. For every one who could appreciate the value of historical evidence, there never was anything to be discovered concerning the name of America.

GUANAHANI.—Mr. Antonio Maria Manrique has written a work* on the First Voyage of Columbus and his landfall, which is identified with Watling Island, in the Bahamas.

This identification, first made by Muñoz, the historian of the New World, is now generally accepted by all those who have studied the question, but there are maps and books of reference, which still uphold the popular belief that Cat Island is the Guanahani, to which Columbus gave the name of San Salvador. In one sense, therefore, it may be said that Mr. Manrique proves what is already known; but his independent conclusion, worked out at a distance from authorities† and under great disadvantages, is in every way creditable to him. He establishes each point by comparing and illustrating the narrative of Columbus with the evidence of the chart.

In the chapter on "The Light Seen the Night Before,"‡ he is so far at one with Navarrete that he shows the impossibility of a light on the low-lying island of Guanahani meeting the eye of Columbus, when the *Santa María* was forty-eight miles distant from the shore, but he believes that Columbus did see a light, probably on board the *Pinta*, and naturally referred it to the land, when this was discovered four hours later. The Admiral's conviction on this point was, in his state of mind and under the circumstances, entirely natural;

* Guanahaní. Investigaciones Histórico-Geográficas sobre el Derrotero de Cristóbal Colón por las Bahamas y Costa de Cuba, que comprenden la situación exacta de la primera tierra descubierta del Nuevo Mundo, por Antonio María Manrique. Arrecife (Canarias), 1890.

† He says, for instance, that he has never seen the *Historia* of Muñoz.

‡ La Luz de la Víspera.

and, rightly considered, it leaves no justification for the severe remark made by Cesáreo Fernández Duro: "Nevertheless, it is painful to record it: Viceroy and Admiral, he exacted also for himself the pitiful sum of money, to which the seaman earnestly laid claim as a help for his poverty, declaring that before any other person he had seen a light, the sure sign of land."*

The very smallness of the pension (10,000 maravedis=$14.70) strengthens the argument of Mr. Manrique on the subject: "To affirm that he had seen the light before any other person was equivalent to declaring that he was, from every possible point of view, the discoverer, the revealer of a new world. To renounce the prize was not simply to give up to another a trifling sum of money; it was, in fact, to resign a glory justly deserved . . . It was to leave the door open for any underhand plot that might be contrived on board the *Pinta*, from which vessel the cry of 'Land!' had first been heard, a plot that would have brought with it the diminution of his prestige as a mariner and, above all, as the commander of the expedition.

* Sin embargo, sensible es consignarlo: Virey y Almirante, quiso para si también la pequeñísima suma que reclamaba con encarecimiento el marinero como remedio de su pobreza, afirmando que antes que otro alguno había visto él una luz, indicio seguro de la tierra.

Colón y Pinzón. Informe, etc., por el Capitán de Navío Cesáreo Fernández Duro, p. 305. Madrid, 1883. Memorias de la Real Academia de la Historia, Tomo X.

The sum of money was the pension of 10,000 maravedis promised by the sovereigns to the person who first discovered land, an amount too insignificant, even after making allowance for the greater purchasing power of money at the close of the fifteenth century, to have constituted an object in the eyes of Columbus.

The land was first seen by moonlight, at 2 A. M., by a sailor on board the *Pinta*. His name, according to Oviedo, was Rodrigo de Triana; according to the testimony of three persons who had sailed with him, Rodriguez Bermejo, of Seville. Navarrete and Cesáreo Fernández Duro believe that these two names designate the same individual.

. . . A man in his position was bound at every hazard to take care that the crew of the *Pinta* should see Martin Alonso, their captain and fellow countryman, in his true light as nothing more than an officer, who had to receive his orders from Columbus." *Guanahaní, p.* 206.

With all his admiration for Columbus, Mr. Manrique cannot be charged with prejudice against Pinzón, or unfairness towards those who seek to find excuses for that captain's disloyalty to his commander.

Whether Columbus first landed on the island of Cuba at Nipe Bay, according to Navarrete, or at Jibara, if we follow Mr. Manrique, is a question that will have to be settled before any steps are taken to erect a memorial statue on the spot in 1892; and the time is short for a decision. It might be better to raise a monument, if monument is needed, on the highest point of Watling Island.

OCTOBER 12, 1892.—Dr. Edward Everett Hale, on behalf of the American Antiquarian Society, of Worcester, Massachusetts, has made the following suggestion in a letter to the Secretary of the Navy:

"Would it not be possible to detail a vessel, with steam power, which might touch at the point of the first discovery—which Captain Fox has fixed at Attwoods Key—on the morning of the 12th of October, 1892? Then let the officer remain as long as Columbus remained, and let him, from day to day, follow his course, which is given in great detail in the log-book of Columbus, so as to really repeat the voyage from day to day, as Columbus made it. Where Columbus caught a lizard our expedition could catch a lizard; where they

caught a turtle, they should try for a turtle; on the day when he met the Cubans smoking they might open a box of Havanas, and in important things or unimporant things, they should follow the detail which he gives of his great adventure."

The Secretary must answer that it would be possible to detail the vessel, with steam power, to go through this performance; but he may well ask why it should be done. If the expedition is proposed in order to prove that Columbus made a voyage to the West Indies, it is, perhaps, unnecessary; and, in any case, the steam power is both an anachronism and an impertinence.

If there is any virtue in repeating details of the voyage, so far as lizards and turtles and cigars are concerned, every other detail must be observed and respected. There must be three vessels, named the *Santa María*, the *Pinta* and the *Niña*, each with her commander and complement of men, properly named, according to the authentic list published by Cesáreo Fernández Duro in his *Colón y Pinzón;* and they must all speak the Spanish of the year 1492, the Admiral with his Genoese accent and idiom, and every other man with the right flavor of dialect that belongs to him. No one detail of dress, or ideas, or rigging, or armament may be neglected; for men and the doings of men are not less important than turtles and lizards. So far as the published extract from his letter shows, Dr. Hale claims for himself the suggestion of the voyage in 1892. It may be his; but in 1889, not long after the *Real Academia de la Historia* had printed its programme of an International Competition to celebrate the discovery of America, it was announced in the telegraphic

news from Europe that the proposition had been made in Spain to equip and send out three vessels from Palos, in 1892, to sail over the track of Columbus in his first voyage.

Whether the Spanish or the American expedition would result in anything, may be doubted. We know the general course that Columbus steered and we know that he reached the Bahama Islands; but we do not know what allowance to make for the errors due to the imperfection of his instruments, and the problem of his landfall is a problem that cannot be solved. Captain Fox is satisfied that Atwoods Key is the true Guanahani; other authorities, no less competent, prefer Watling Island. Even if this point were decided by general agreement, it would not have been proved, and a new discussion would begin with each successive point; and the literature of mere discussion concerning the discovery of America is already a weariness to the flesh and to the spirit.

RECENT CHARTS OF THE U. S. HYDROGRAPHIC OFFICE.

Pilot Charts of the North Atlantic, January-June, 1891.

No. 1102.—East Coast of Newfoundland: Cape Bonavista to Cape St. Mary.

No. 1239.—Gulf of Mexico: Campeche Bank, Obispo Shoals, E. and S. Triangles.

No. 1240.—Gulf of Mexico: Campeche Bank, Alacran Reef.

No. 1241.—Bahamas: Egg Islands to Eleuthera Island.

No. 1242.—Japan: Island of Nippon, Yokohama Bay.

No. 1243.—China Sea: Singapore Strait, Singapore Roads.

No. 1244.—Hawaiian Islands: Harbors of Maui.
No. 1245.—West Indies: Island of Curaçao, Spanish Water, Spanish Haven and Caracas Bay.
No. 1246.—West Coast of Africa: Cape Juby to Cape Cantin, with Madeira and the Canaries.
No. 1247.—North America: United States and Canada, Passamaquoddy Bay and Approaches.
No. 1248.—Marshall Islands: Ebon Atoll, Arno Atoll.
No. 1249.—Chile: Mejillones del Sur Bay, Angamos Point and San Luciano Anchorages.
No. 1250.—Guatemala: Port Livingston, Gulf of Honduras.
No. 1251.—Hawaiian Islands: Harbors of Kauai.
No. 1252.—Hawaiian Islands: Harbors of Oahu.
No. 1253.—South America, West Coast: Harbors, Coast of Chile.
No. 1254.—China Sea: Hongkong Harbor.
No. 1255.—China: Wusung River, Shanghai Harbor.
No. 1256.—China Sea: Formosa, Kelung Harbor.
No. 1257.—Hawaiian Islands: Harbors of Hawaii.
No. 1259.—South America: West Coast, Harbors on the Coast of Chile.
No. 1261.—West Indies: Island of Saint Lucia.
No 1263.—Korea: South Coast, Crichton Group—Paön Do Monocacy Anchorage.
No. 1264.—Hawaiian Islands: Oahu, Port Waianae.

THE FOUNDATION OF NEW YORK.—The *Compte Rendu* of the Paris Société de Géographie, No. 11, for 1891, announces on p. 278 that it has received from Mr. P.-Th. Virlet d'Aoust a note on the history of the foundation of New York City in 1623, by a colony fo

Flemings, Walloons and *Avesnois*, and presumably, therefore, more or less French.

This note is to appear in the *Compte Rendu*, No. 12, and may surprise the persons, who have been led to believe that the city of New York was, in fact, founded by the Dutch in the year 1612, or thereabouts. It is never too late to learn, and Mr. Virlet d'Aoust's Flemings must have been remarkable men. To found a city eleven years after its foundation is a feat that equals, if it does not surpass, the celebrated capture of Holland by the Dutch.

It is just possible, however, that 1623 is a misprint for 1263.

Recession of Niagara Falls.—Mr. John Bogart, State Engineer and Surveyor, in his Report, addressed under date of December 2, 1890, to Hon. Andrew H. Green, President of the Commissioners of the State Reservation at Niagara, presents what he believes to be a substantially correct statement of the mean annual recession of the Falls.

The earliest record available for accurate comparison is that of the survey made in 1842, under the direction of Prof. James Hall, State Geologist.

Comparing this with the survey of 1890, it appears that there has been a yearly recession, at the American Fall, of $7\frac{68}{0}$ inches, and, at the Canadian, or Horse-Shoe Fall, a yearly recession of 2 feet $2\frac{16}{00}$ inches. The American Fall has receded in the 48 years $30\frac{75}{10}$ feet, and the Canadian Fall, in the same time, $104\frac{51}{100}$ feet.

In 1842, the length of the crest line of the American Fall was 1080 feet. It is now 1060 feet.

The crest line of the Canadian Fall was, in 1842, 2260 feet, and in 1890, 3010 feet.

The area of the rock, which has disappeared in the 48 years, is, for the American Fall 32,900 square feet; and for the Canadian, 275,400 square feet.

THE NATIONAL GEOGRAPHIC SOCIETY announces a change in the publication of its organ, the *National Geographic Magazine*, which will hereafter be brought out in the form of a series of brochures, each issued as promptly as possible after reception of the material. These brochures will be arranged for gathering into volumes, each comprising the issue of a calendar year, with title-page, list of contents and index, and an abstract of the Society's proceedings, together with lists of officers and members, and a copy of the by-laws and rules.

The Society was organized in January, 1888, and now has an active membership of about four hundred.

GOLDTHWAITE'S GEOGRAPHICAL MAGAZINE. — This monthly publication, begun with the year 1891, sustains the promise of its first number, and may be considered a permanent addition to the resources available for geographical education. It is well printed and well illustrated and it furnishes, under the skilful management of its editor, Mr. Cyrus C. Adams, accurate and entertaining information.

It was an act of faith in Messrs. Goldthwaite to venture upon such an enterprise, and it is satisfactory to note that, although the magazine has passed into the hands of other publishers, it will continue to bear the name of its founders.

PROF. HEILPRIN'S MEASUREMENTS OF HEIGHT.—Dr. H. Wichmann writes, in *Petermanns Mitteilungen, 37 Band*, p. 104, that cartographers and authors of geographical text-books will do well, for the present, not to adopt Prof. Angelo Heilprin's altitudes of certain Mexican volcanoes, but to retain the older calculations as more worthy of confidence.

A communication from Prof. Hann informs Dr. Wichmann that Heilprin's results were obtained from a single reading, in each case, of an aneroid barometer, which may, or may not, have been corrected; and this had undergone, on the Peak of Orizaba, an alteration which Heilprin himself estimated at .1 of an inch. His measurements may be about 200 feet out of the way.

It is unaccountable, adds Dr. Wichmann, that Heilprin did not improve the opportunity to have his instruments corrected, before and after each ascent, at the Observatory in Mexico; but it does not appear whether the neglect to do this is matter of record, or a mere surmise on the part of Dr. Wichmann's correspondent.

On the 8th of January, 1890, shortly before Heilprin's visit, Ixtaccihuatl, previously looked upon as unconquered, was ascended by the German envoy in Mexico, Baron v. Zedtwitz, in company with the American Consul; but they found, when they reached the summit, that a Mr. Salis had accomplished the feat a few days before them. Baron v. Zedtwitz calls the ascent of Ixtaccihuatl a "real glacier climb," that of Popocatepetl a "toilsome march in the snow."

THE VOLCANO OF POÁS.—Mr. H. Pittier, who is in charge of the *Instituto Físico-Geográfico Nacional* at

San José, Costa Rica, devoted several days (26–31 August) last year to an examination of the volcano of Poás, which is about 19 miles to the north-west of San José.

Poás belongs to the category of complex volcanoes, formed by successive elevations, each simultaneously producing a new crater. Of the three craters now existing, one, apparently the oldest, is near the top of the mountain, at an elevation of 8,400 feet, and only 250 feet below the very summit.

This crater is now filled with water, and forms a beautiful lake about 1,500 feet in diameter. Many of the streams that supply the lake have a sulphurous character, but the water is pleasant to the taste and its temperature varies between 52° and 55° Fahr. There is almost no change in the level of the lake from one season to another, and its surplus waters pass off through the river Angel, at the extreme north-western point of the basin.

The second crater has been almost completely obliterated by the formation of the third, the actual vent of the mountain.

This crater, which lies between the first and the second and a little to the west, is an extremely deep cavity, with walls everywhere perpendicular, except at two points which allow of a descent to the bottom. The gases, continually escaping from below, have acted on the surface of the rocks that form the wall so that it is not easy to identify them, but Mr. Pittier secured specimens of gypsum, pumice, tufa and volcanic sand. The clefts in the wall of the crater were filled with veins of sulphur, and masses of this substance were seen on

every side. At the very bottom was a lake, 250 feet in diameter.

Frantzius, in 1861, found the temperature of the water in this lake to be 102° Fahr., and Mr. Pittier records a maximum temperature of 180°. The mean level of the lake was 7,470 feet above the sea. Ravines descend on all sides of the crater with a direction toward the centre. The largest are on the southern side, where the walls are highest, and they are cut in the heaps of *débris* at the foot of the rocks, forming beds for the occasional torrents that come down from above. The results of the active erosion caused by these torrents are heaped up in cones on the edge of the lake, or spread out like little beaches. Thread-like streams of water, clear, but with a taste of sulphur, are found in some of these ravines, and are, probably, the only feeders of the lake.

To the south-west, there is in the wall of the crater a wide opening, the threshold of which is at a height of 360 feet above the water; and, on the east, at about two-thirds of its height, the wall broadens into a terrace in the form of a half-moon.

The warm water of the lake is discolored and dirty-looking, and it is saturated with sulphuric acid, generated, apparently, as Daubrée thinks, by the decomposition of sulphates in the heated waters. There is a continual ebullition of gases, and Mr. Pittier has verified in the steam that rises the presence of sulphurous anhydrid and carbonic acid, the usual gaseous products of volcanoes in process of extinction.

At intervals not yet exactly determined a sudden agitation manifests itself at a point near the northern shore of the lake, and gradually increases until there is thrown

up an immense column of muddy black water, which falls back heavily into the pit. This sudden fall produces a dashing of waves, and the lake seems to be tossed by a furious tempest. The spectacle is made more impressive by the sound of the waves, lapping on the rocks at the edge of the lake, with the repetition of the thousand echoes that take it up. Then the vapors, condensing rapidly, form a dazzling white veil, that hides the dark abyss, and rises in shining columns to a height of many hundred feet. Little by little quiet is restored, the winds dissipate the vapors and the crater resumes its ordinary aspect, until another eruption succeeds. The clouds of vapor caused by these explosions are seen from San José, as well as from many other distant places.

Mr. Pittier's explanation of this phenomenon is that the water and the mud of the lake sink to the volcanic centre, where the temperature is extremely high, and the constantly increasing pressure of the resulting gases brings on the explosion.

In his first exploration, made in July, 1888, Mr. Pittier had observed that the bed of the river Angel was separated by no great distance from the edge of the crater, and it occurred to him that there might be reason to apprehend the irruption of the waters of the upper lake into the crater lake. He was led to make a thorough investigation of this matter by a report that the river was already discharging into the crater, and that there was, morever, direct filtration from the upper into the lower body of water.

Careful measurements, executed with the assistance of Mr. Menardo Reyes, established the fact that there

was no filtration, and that Mr. Pittier's estimate of about 250 or 300 feet for the distance between the river Angel and the crater was rather below the truth. Adding to this distance the thickness of the terrace with its talus, and the barrier between the river and the terrace, the wall of division between the river and the crater must be at least 800 feet in breadth.

THE EXPLORATION OF THE PILCOMAYO.—According to *Petermanns Mitteilungen, 37 Band*, p. 104, the expedition on the Pilcomayo River has had an unfortunate issue. Captain Page, of the Argentine Navy, known for his work on the Bermejo River in 1885, started in April, 1890, in the little steamer *General Paz*, on a voyage up the Pilcomayo in the hope of establishing the long-sought direct communication with Bolivia. The diminishing depth of the river compelled him to abandon the steamer for the steam-launch *Bolivia*, built in Scotland for navigating shallow streams, and in this he ascended as far as the Paliño Swamp, 150 leagues (391 miles) from the mouth of the river. In the numerous canals of the swamp the channel was missed, and the provisions gave out, so that Captain Page had to send some of his men back in a small boat to procure supplies. Before help came, Captain Page died; his companions, his son Nelson and the English zoologist Graham Kerr, continued the voyage.

MR. H. W. SETON-KARR'S MAP OF THE CHILCAT COUNTRY.—A GEOGRAPHICAL NOTE in the BULLETIN for March reproduced some of Dr. Aurel Krause's remarks on the resemblance between his brother's Map of the

Chilcat Country (1883) and the one published by Mr. H. W. Seton-Karr in the *Proceedings* of the Royal Geographical Society for February, 1891. Mr. Seton-Karr makes the following statement, in a letter dated May 1 :

"The basis of the small map, in the February number of the *Proceedings* of the Royal Geographical Society, to illustrate the account I gave of my comparatively insignificant journey in British Columbia and Alaska last summer, was not the chart made by Dr. Krause. This I have never seen, moreover, I do not understand German and have never had the pleasure of reading his account of his journey up the Chilcat Valley and back (made ten years ago), which I am informed is published in the Berlin *Zeitschrift* for 1883, nor did I know until after my return that he had ever been there, nor am I aware of any account of his journey in the English language.

"The only map furnished by me as a copy to the draughtsman of the Society or used by him was the latest and best procurable of that region, and to which I had added my route and corrections, published by the Geological Survey of Canada, and entitled 'Yukon District and northern part of British Columbia, Annual Report, 1887, Part B,' by Geo. M. Dawson, D.S., F. G. S., in the construction of which Dr. Krause's chart of this particular river, which I never pretended to have discovered, as well as the work of many other surveyors, of whose names I am as ignorant as I was of Dr. Krause's, have rightly been incorporated. I obtained the name (Klaheena) of one of the tributary rivers from the Indians, and did not manufacture this name out of Dr. Krause's Tlehini, as the writer insinuates, not having

seen his account, and no name being given on the map above referred to.

"I learned from Dr. Dawson that Krause's map was pretty accurate, but that the Chilcat and other valleys were probably shown too wide, and judging by the slight differences I found between my observations and the details which I assume were taken by Dr. Dawson from Krause, I think I did the latter perfect justice, without prejudice, in calling his map 'fairly accurate.'"

THE PARIS SOCIÉTÉ DE GÉOGRAPHIE.—At the meeting of the Paris Geographical Society, on the 17th of April, the President, M. de Quatrefages, sketched the history of the Society, from its feeble beginning in 1821 to its present eminence as the greater parent of a great progeny.

When established in 1821, the *Société* numbered 217 members. One of these, M. Vivien de Saint-Martin, now an Honorary President of the Society, has survived all his contemporaries.

Like every similar society, that of Paris has had its periods of adversity. The membership declined in 1830, and the Revolution of 1848, when there were only 101 names on the roll, seemed to foretell the end; but no one lost heart, and courage found its reward. A steady upward movement began, with the presidency of M. de Chasseloup, in 1864, and in 1881, when death removed its President, Adm. La Roncière le Noury, the Society counted 2,108 members. Four years later, under the presidency of M. de Lesseps, the membership had increased to 2,504, the highest figure yet attained. The slight falling off within the succeeding five years has no

significance, and even if the Society fails to increase its number to 4,000 members, as M. de Quatrefages thinks it may, it has passed, so far as anything human can pass, beyond the reach of accident.

It must be regretted that one passage of the President's address is strangely unjust to three Societies, which have reason to be proud of their history. M. de Quatrefages says: " . . . . Everywhere, in both worlds, the example set by France was followed. Berlin (1828), London (1830), and St. Petersburg (1845), were the first to imitate us." *Société de Géographie, Compte Rendu, 1891, Nos. 9 et 10, p. 249.*

So far as Berlin and London are concerned, this is correctly stated; but after the London Society come the Frankfurt *Verein für Geographie und Statistik* (founded in 1836), the *Instituto Historico e Geographico do Brazil* (founded at Rio de Janeiro in 1838), and the *Sociedad Mexicana de Geografía* (founded at Mexico in 1839); and then the St. Petersburg Society (1845).

THE WORD "STEPPE."—*La Géographie* (No. 123, 1891), discusses the question whether the word *steppe* should have the masculine or the feminine article in French, and remarks that usage is in favor of the feminine, in spite of Littré, who quotes Lévesque, Chateaubriand, and Victor Hugo. The word is in the plural in all the quotations, and the decision of gender rests with Chateaubriand, who alone gives a qualifying masculine adjective, *verdoyants.*

Between the authority of Littré and the predominant usage *La Géographie* remains in doubt, not being able to appeal to the Russians for the extra-

ordinary reason that "they have no article, and say neither *le* nor *la*."

This denial of the Russian right to grammatical gender for the want of an article is enough to make a despot weep, and it seems fair to ask whether *La Géographie* has ever heard of a tongue, known to some men as Latin. The word *step'* (steppe) is feminine in Russian and in most of the languages which have adopted it.

THE EXPLOSION IN ROME.—Mr. Rodolfo Lanciani, in a letter to the London *Athenæum* of May 23, describes the effect of the great explosion in the powder magazine at Rome on the 23d of April:

"One of the most serious casualties has been in the Church of S. Sabina, on the Aventine, where the doors carved in cedar or cypress wood, a work of the fifth century, unique in its kind, have been wrecked. The panels, representing scenes of the Old and New Testament in a style bearing a strong resemblance to the diptychs of the decadence, are all safe, but the framework has sustained serious injuries. The doors are broken in fourteen pieces.

"One of the frescoes of Bonfigli in the Conservatori Palace has also been injured, a piece three feet square having been detached from the wall. In the Church of the Aracoeli a glass window has been shot against the side wall of the Chapel of S. Bernardino da Siena, scratching slightly one of the admirable frescoes of Pinturicchio.

"In the basilica of S. Paolo fuori le Mura the stained-glass windows with full-length figures of apostles and

saints, have all been blown to atoms. They represent a loss of 6,000 *l.*

The stained-glass windows on the stairs of the Vatican Palace, in the apse of St. Peter's, and in the Church of S. Maria sopra Minerva, have met with the same fate.

These last, at all events, are only pecuniary losses, the windows being of modern and not always successful work. The only good specimens of ancient painted glass in Rome—the windows of Claude and Guillaume de Marseille in the choir of S. Maria del Popolo, executed by order of Julius II., and representing events in the life of the Virgin Mary—have sustained no injury. The prompt and energetic action taken in this unlucky event by our Minister of Public Instruction, Senatore Pasquale Villari, gives us the security that not only the damage will be soon repaired, but that we shall be protected from the repetition of such appalling calamities.

"As students of physics and meteorology seldom have the opportunity of experimenting with 265,000 kilos (584,219 lbs.) of gunpowder, it may interest your readers to know what results have been gathered by men of science from this colossal blast. A kilo of gunpowder is said to develop in exploding 216 litres (228 qts. U. S.) of gas; therefore 57,000,000 litres (60,192,000 qts. U. S.) were developed from the Polveriera di Vigna Pia. The power of this mass of gas was such that it could have raised to the height of 450 mètres (1,476 feet) a weight of 117,000 tons.

"Although the powder magazine was located in a hollow between the hills of Vigna Pia, Monte Verde, and Pozzo Pantaleo, and the main force of the explosions was thus directed upwards, the pressure of the air has been

felt equal everywhere—on the tops of the Gianicolo as well as in the deep recesses of the Tre Fontane—and it has acted with equal energy on flat and vertical surfaces. Gates, secured with heavy bolts and doubled with sheets of brass or iron, have been blown open in the Lateran and at S. Saba; and the same effect has been felt even in shut and covered places. Thus, at S. Paolo fuori le Mura, the pressure of the air penetrating through the gaps of the broken windows was strong enough to break into splinters the heavy glass doors of the four chapels of the transept.

"The action of the blast manifested itself in two ways—by an earthquake and by an air-wave. The vibratory movement of the earth travelled with greater velocity than the air-wave; so much so that the shock was felt in the city and the suburbs several seconds before the report was heard. Flower-pots, *bibelots*, lamps, and bottles were upset in closed rooms protected from any inrush of air.

"The blast set the barometrical column in violent motion, beginning with a pressure wave of 204 kilos (450 lbs.) per square mètre ($1\frac{1}{5}$ square yards) followed by a counter wave of suction. The first was marked by an increase of 14 millimètres in the barometer, the second by a decrease of $14 + 11 = 25$ millimètres. The power of suction of this last wave was such that 90 per cent. of the windows have been blown not inwards, but outwards, the fall of broken glass in the streets wounding some three hundred passers-by. The movement in the barometric column lasted sixty-six seconds. It is believed that one-third only of that prodigious mass of gunpowder had time to ignite; the greater portion was blown

up bodily, its explosion taking place gradually. Granules of powder have been collected as far as Ponte Milvio. I myself found a charred piece of an ammunition box in a field two and a half kilomètres (1½ miles) from the Vigna Pia. The report was heard and registered not only at Subiaco, Viterbo and Anagni, but also at Caserta, Ischia, and Pesaro, at a distance of more than two hundred miles."

The site of the powder magazine was on the right bank of the Tiber, just beyond the wall of Aurelian; about 1,000 feet to the east of the Villa Sciarra, and a mile and a third in a southeasterly direction from St. Peter's.

EXPLORATION OF THE BLACK SEA.—The Russian Government carried out, in the summer of 1890, a scientific examination of the Black Sea, with the following results:

The mean depth was 6,004 feet, the minimum (600 feet) being in the north-west, bounded by a line drawn from Varna to Eupatoria, and the maximum (7,366 feet) in the sea between the Crimea and Anatolia. The temperature of the surface water was 72° Fahr. in the middle of the basin, and from 75° to 77° to the west and to the east. At a depth of from 30 to 174 feet, the temperature sank to 55° on the south side, to 53° in the centre, and to 52° in the east, west and north. At 180 feet the temperature is only 45°; below that point it rises and at 6,004 feet it is above 48°. In other seas situated under medium latitudes, the temperature decreases with the depth or remains invariable after reaching a certain point, as in the Mediterranean, which has a temperature of 55°.

At a depth of 450 feet, in the Black Sea, sulphuretted hydrogen is met with, and this is found in such quantity at 938 feet that animal life ceases. At this depth there were found semifossil shells and a few mollusks. Only one-thousandth part of the water of the Black Sea is received through the Bosporus.

INCREASING SHALLOWNESS OF THE VOLGA.—The *Bulletin* of the Société Royale Belge de Géographie, 1891, No. 1, quotes from the *Novosti* the observations made by Prof. Issaief during a recent trip on the Volga. He found that the Kostroma forests had been replaced, for a length of 100 miles, by a scanty brushwood and that the formerly impenetrable woods of the Unja had disappeared.

This destruction is the work of the boatmen on the rivers, who find the wood ready to hand for fuel, and much cheaper than coal. Their depredations have been carried on with impunity, in the absence of legislation for the protection of the forests, and the result is that the country along the Volga and its affluents has, in many places, been entirely stripped of timber. Where the banks are high and rocky, navigation is still unimpeded; but where the land is low and sandy, the bed of the river is rapidly filling, and unless measures are adopted for replanting the woods, the Volga will cease to be a navigable stream.

A FRESH-WATER LAKE NEAR THE ARAL SEA.—M. Ed. Blanc, in a communication to the Paris *Société de Géographie* (*Compte Rendu*, 1891, No. 6), mentions the discovery by Col. Koslofski of a lake, hitherto un-

known, to the south-west of the Aral Sea, where the maps formerly represented the Gulf of Aibugir.

In the Russian expedition against Khiva in 1872–73, one of the *corps d'armée*, marching by the west and south-west of the Sea of Aral, passed directly across the position assigned to this body of water, without finding a trace of it; and thereafter the Gulf of Aibugir disappeared from the maps. The surveys of Col. Koslofski show that the gulf, when it was in existence (as lately as the year 1854) could not have had the outline indicated on Khanikof's map; and it is strange enough that the present lake is filled with fresh water.

This fact disposes of the suggestion sometimes made that, under certain conditions, there may be a temporary communication of the lake with the Aral Sea.

The lake has no outlet, and its continued existence in a region where evaporation is so powerful and so rapid does not seem to be entirely explained by the flow of water, supplied to it by a stream from the north-east, fed by the drainage filtered from marshes formed by the overflow of the Amu-Daria.

The basin of the lake may have had its origin in one of several causes. It may have been a part of the original basin of the Aral, and have been isolated by the progressive aridity so general in this portion of Asia; or it may be the result of a geological change, which has raised or depressed the level of the country. The primitive slope of the ground was uniform towards the north, and the waters must have followed this inclination towards the Aral Sea, carrying with them the salt held in solution.

If then, the southern end of the original gulf, which

forms the present basin of the lake, underwent a geological depression, making it lower than the surrounding region, the overflow of the Oxus in time of freshet, and the drainage of the marshes, would have found their way into it. Another, and perhaps the simplest, theory of the formation of the Aibugir is that which supposes that, during a great freshet, a branch of the Oxus (Amu-Daria) may have poured into the Gulf of Aibugir, driving the salt water before it into the Aral, while the earth and the silt, borne down to the sea by the main branches of the river, heaped themselves into banks to the right and to the left of the mouth, and created a bar across the gulf at a level above that of the water at its ordinary stage. When the inundation subsided, the bar would remain, and the gulf that had been would have been changed into the lake.

THE BENUÉ AND THE KIBBÉ.—*Nature* of May 14 reports Maj. Claude M. Macdonald's account, read to the Royal Geographical Society, of his journey up the Benué and its northern tributary, the Kibbé, in 1889. Maj. Macdonald is the first explorer of the Kibbé and made his start on the 21st August.

It has been believed that a connection existed between Lake Chad (Tchad) and the Benué, by the overflow of the Shari on one side and the Kibbé on the other.

At its mouth the Kibbé is 250 yards wide and from 10 to 12 feet deep, in the summer, the season of high water. For the first five or six miles the country was flat and well wooded, and patches of cultivation were then to be seen. After two hours' steaming Dinghi, a Fulbe village, was passed. The people, who had never before

seen a white man, shouted out friendly salutations. August 22, the *Benué* anchored off a large village on the left bank. The people who came down, most of them women, were of the purest-bred Fulbe, and the best looking Maj. Macdonald had seen in Equatorial Africa, east or west.

Their features approached the European and their expression was gentle and modest, though full of vivacity.

The village, named Pamu, was governed by an Emir, who was under the jurisdiction of the Emir of Vola. Every yard of ground was cultivated, and an active barter was carried on with the greatest good temper on both sides.

Soon after leaving Pamu, the steamer reached a deserted country, fifteen miles in length, the barrier between the Mohammedan and the Pagan tribes. The ground was undulating, with isolated hills, and well wooded. The river, 100 yards wide, was dotted with grassy islands and was shallow in some places. It narrowed the next day, and made a sharp bend to the eastward to grassy mountains, with a higher range left to the north. Cultivated patches could be seen, and the main valley stretched back three or four miles; but there was no village. Soon, however, down the winding path came a line of warriors, 200 in number, some with a cloth around the waist, but more without any clothing.

All were armed with spears, three to a man. The steamer anchored about fifteen yards from the bank, and the warriors took to cover behind the boulders and tufts of grass; and a parley began.

When assured that the white men were not Mohammedans, the natives, who were the outposts of the Pagan tribes, said they lived in a village named Katsho, back among the hills, and, after some persuasion, two of them boarded the *Benué*. They prostrated themselves on reaching the deck; and when they returned to the land the crowd had increased in number.

"The scenery," says Major Macdonald, "was now very picturesque; to our right, *i. e.*, the south of the river, some few yards from the water's edge, the mountains rose in some places quite abruptly. These mountains were for the most part covered with green wavy grass, very pleasant to the eye. One or two streams trickled down the mountain side, forming now and again picturesque waterfalls. The river had suddenly broadened out to a lake, or more properly speaking, marsh, some three miles long by two wide. The range of grassy mountains I have mentioned ran along the southern shores of the lake and terminated with it. The country on the east and north shores of the lake, as far as the eye could see in the direction of the Tuburi marsh (near the Shari River) was open and gently undulating, while from the western shores of the lake the beautiful range of mountains, with their needle-shaped peaks, stretched back apparently for many miles. In the north-east corner of the lake we saw a very large village some two miles distant; this we afterwards ascertained was Bifaré. The channel of the river evidently followed the base of the southern hills."

The steamer proceeded and came to a large village, in which the mud huts were built in clusters; and there were hamlets on the slopes of the hill above. The chief

of the village said the place was called Kaku, and the name of the big water was Nabaret.

The people of the district have cattle, but no horses; and their food is chiefly dhurra and fish. They hunt the hippopotamus.

Major Macdonald took a guide on board and tried to make for Bifaré, on the north-east shore of the lake, and about two miles from Kaku. After going 100 yards, the water shoaled, and the steamer was put about for an opening in the high dhurra, which grew in "immense quantities." Through this opening the channel was found once more, but only 8 yards wide, and 2½ feet deep, and with a swift current. The boat kept on for about a mile between banks covered with dhurra 8 feet high, but had then to retreat and float backwards for a half-mile, the stream being too narrow to turn in, and not more than 2 feet deep. The farthest point reached was a mile and a half from Kaku and thirty miles from Dawa, in the Tuburi country, the place at which Dr. Vogel stopped in 1854, and the farthest point reached by any European entering Africa from the north.

This expedition seems to have established the fact that there is no connection between the Benué and the Shari.

EASTERN EGYPT.—The London *Athenæum*, of May 23, has information from Mr. E. A. Floyer, now engaged in the exploration of the country between the Nile and the Red Sea.

Mr. Floyer left Assuán in February, with the intention of marching east to Berenice, passing by the well of Abraka, which was marked on a route survey, of which

he had a copy. After two days spent in ascending a ravine, and three or four more in trying to find his way across a plain of Nubian sandstone, he reached Abraka, on the 19th, in Lat. 23° 29′ 51″ N., and Long. 34° 47′ E.

About 8 miles to the south was a rock fountain at the foot of a cliff 1,200 to 1,500 feet in height, on the north side of the Wádi Háshim. Here was a valley full of flowers. North of Abraka, says Mr. Floyer, "the crystalline rocks intrude through the sandstone and nummulitic plain which is superimposed, and in the south. . . . the crystalline rocks running more easterly break off the edge of the plateau and leave a rugged line of jagged edges, along which are the mines and quarries of the ancients." Some quartz cones were "perfectly symmetrical, 300 ft. high, 120 ft. diameter at top, and descending with almost artificial regularity to the base—solid quartz, tinged a lovely pink with iron oxide."

The temple at Berenice is built of coarse coral rock and the wall surfaces are scaled off.

The character of the surrounding ruins was that of barracks and forwarding stations for the mines in the interior. On the 16th of March, Mr. Floyer wrote from the Wells of Abu Had as follows:

The mountains to the west of Berenice are drained by the Wadi Kharīt, which joins the Wadi Gharāra, which falls into the Nile near Darāwi. The catchment basin of the Gharāra extends north and south from 23° 30′ to 24° 30′, but the great body of water passes north-east by the Wadi Le*h*ma and the Wadi Jemāl. The latter is a fine, well-treed *wádi*, and apparently curves into the mountains from the north-west. Judging from

the driftwood, it carried down during the last rain a body of water half a mile wide, and too deep to be passed by a man on foot.

Mr. Floyer offers, with great diffidence, some arguments antagonistic to the theory of a former pluvial epoch. In some cases the *wádi* bed, from a width of a mile, contracts suddenly to a width of sixty yards, but the sides are not eroded. Further, where a depth of water of three feet instead of two feet would have changed the course, the course has remained unchanged; and, still further, the gneous pebbles are carried by the stream little farther towards the sea than similar pebbles have slid down the talus.

About 20 miles north of Berenice the Wadi Haratreit cuts a path twenty feet deep from the hills to the sea, through vertical schists, granite, schistose with igneous veins and low mounds of recent sandstone. There was a fine grove of Avicennia, some trees measuring four and a half feet round the bole. The coloring of the granites was varied, grey, blue and sage-green, buff and bright green, the last a handsome stone.

The people of the country, the Ababde, were very helpful to Mr. Floyer. He divides them into two classes; the wilder, light-colored men, who rarely quit the mountains, and the darker-skinned men who live in the Nile valley, or near it.

"The former," he says "are much like human gazelles. I met one old man, a veritable Orozembo, with his two children. These were beautiful creatures, coats like satin and large, lustrous, timid, soulless eyes just like those of a gazelle. They are dignified, courteous, and they may know a great deal. But they are

inarticulate, and the traveller passes them by as he does the gazelle.

"The darker villagers are intelligent and docile people, not energetic and much at the mercy of the gombeen man or Government Sheikh, who lives on the river, and is sometimes a descendant of old-time Báshibazuk and Mamluk garrisons of Upper Egypt. . . . They have a name for every plant and tree. . . . Most of their mountains are called after some plant, though I have rarely found the plant on the hill named after it. They have five names for hills. . . . Only 'mountains,' *i. e.*, *jebel*, have *wádis*, and it is for this reason that a description of the country should retain the name *wádi* as distinct from the valley. . . . The Abade—the plural is Ababde— . . . when taken to the top of a high hill will name all the places in view. . . . He knows and rarely mistakes granite, sandstone, mica, quartz, and schist. . . . Moving up north along the grey granite belt, we crossed the Wadi Jemal, and reached the ancient mining town of Sakait. Here we saw at a glance that there was many days' work before we could open our lips—temples cut in the rock with Greek inscriptions, tantalizingly partly legible, mountains of shining talc and chlorite, and veins of soft rock of the texture of asbestos, which last we found, by the way, further south; magazines, mines, long galleries stiflingly hot, and a host of things requiring long and patient examination."

Berenice, founded by Ptolemy Philadelphus, stood on a narrow rim of shore between the mountains and the Red Sea. The "Temple" referred to stood in the middle of the city. It was dedicated to Serapis, and it

bears among the inscriptions on its walls the hieroglyphic names of Tiberius and Trajan. The ruins of this city have been visited and described by Cailliaud, Belzoni, Wilkinson and others; and in 1873 Col. Purdy, of the Egyptian army, made a plan of the port and the ancient city, and afterwards surveyed, with the aid of Col. Colston, the country between Berenice and Berber.

THE CONGO FREE STATE.—Col. Geo. W. Williams has brought out three pamphlets* on the Congo State, dated, respectively, July 16, 1890, July 18, 1890, and October 14, 1890. The first and the third arraign the administration of the Free State for nearly every fault and every weakness with which a government can be charged; and on p. 2, of the "Open Letter," it is declared that "a list of competent and veracious witnesses, documents, letters, official records and data has been faithfully prepared, which will be deposited with her Britannic Majesty's Secretary of State for Foreign Affairs, until such time as an International Commission can be created with power to send for persons and papers, to administer oaths, and attest the truth or falsity of these charges."

The charges are twelve in number: that the government is deficient in moral, military and financial strength;

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* I.—An Open Letter to His Serene Majesty Leopold II, King of the Belgians and Sovereign of the Independent State of Congo, by Colonel the Honorable Geo. W. Williams, of the United States of America.

II.—A Report on the Proposed Congo Railway, by Colonel the Honorable Geo. W. Williams, of the United States of America.

III.—A Report upon the Congo State and Country to the President of the Republic of the United States of America, by Colonel the Honorable Geo. W. Williams.

that the posts established are in charge of Zanzibaris, who abuse their power; that the Government violates the contracts made with its soldiers, mechanics and workmen; that the Courts are abortive, unjust, partial, and delinquent; that the Government is excessively cruel to its prisoners; that women are imported and hired out by the State to the highest bidder; that the State engages in trade, in competition with commercial houses; that the Government permits and itself prosecutes the slave-trade; that the Government wages war upon the natives in order to secure slaves and women; that the Government is engaged in the slave-trade, wholesale and retail; that the Government has made a contract with the Arab governor at Stanley Falls for the establishment of a line of military posts from the Seventh Cataract to Lake Tanganyika, "territory," (says Col. Williams) "to which your Majesty has no more legal claim than I have to be Commander-in-Chief of the Belgian army"; and that the agents of the Government have misrepresented the Congo country and the Congo railway.

There is nothing incredible in these accusations, but Col. Williams cannot look for an expression of opinion concerning them until he has produced his evidence; and he does not strengthen his case by his manifest prejudice against Stanley.

Dwarf Races of Africa.—A correspondent sends to the *Bulletin* of the Société Royale Belge de Géographie, No. 2, 1891, some extracts from a paper by Dr. Oscar Lenz on the African Pygmies.

Dr. Lenz has arrived at the conclusion that the Bush-

men of South Africa are a branch of the Central African dwarfs, and that a distinct, aboriginal race long ago inhabited the vast forests that stretch from the banks of the Congo to the Lake Region. This race was probably persecuted and scattered in various directions by more active and powerful tribes of negroes. "It seems to me," says Dr. Lenz, "that it is now proved that certain tropical regions of the vast black continent are inhabited by a race of men smaller than the negroes; and that these diminutive people belong to a degenerate family, which also presents all the characteristics of a degraded race, scattered far and wide in groups of a few hundred individuals, like the gipsies in Europe, without settled abodes, and wandering through the impenetrable forests between the Congo and the Lakes."

He thinks it is incorrect to denominate these people *dwarfs*, because the word implies a certain deformity of structure, while the African Pygmies are in fact, well proportioned. Dr. Lenz presents the following table of comparative statures:

	Feet.	In.	Feet.	In.
Patagonians	5	10	5	11
Swabians (S. Germans)	5	10½		
Kaffirs	5	10½		
Polynesians	5	10½		
Don Cossacks	5	8		
Englishmen	5	6	5	7
Austrian Germans	5	5	5	7
Negroes	5	5	5	6
Frenchmen (North)	5	5		
Bavarians	5	4½		
Frenchmen (South)	5	4½		
Chinese	5	4½		
Australians	5	3¾		
Amboynese	5	2½		
Timorese	5	2½		

	Feet.	In.	Feet.	In.
Malays	5	1¾		
Andamanese	5	1½		
Akkas (Schweinfurth)	4	11		
Laplanders	4	6¼	4	11
Anbongos (Du Chaillu)	4	3	4	11
Bushmen	4	3	4	6
Eskimos	4	3		
Pygmies, men (Stanley)	4	3	4	8
Pygmies, women (Stanley)	3	3	4	1

The Bayagas, on the Ogowe River, described by Paul Crampel (*Compte Rendu, Soc. de Géog., Paris, 1890, p. 552*), measured 4 feet 7 inches.

WEST CENTRAL AUSTRALIA.—A paper in Part I, Vol. VIII, *Transactions* of the Royal Geographical Society of Australasia (Victorian Branch), describes Mr. W. H. Tietkins's explorations in the country to the west and north of Lake Amadeus, in the south-western corner of Alexandra Land. The expedition under the command of Mr. Tietkins was the second sent out by the Central Australian Exploring and Prospecting Association, and started from Alice Springs Telegraph Station, March 14, 1889, with twelve camels, and four months provisions for the party of five.

The course was along the north side of the Macdonnell Ranges for 90 miles to Glen Helen Station. Northward from the Macdonnell Ranges lies a broad plateau known as the Burt plain. It is well grassed and lightly timbered near the Range with *Bloodwood Mulga* and *Grevillea*, and there were also some well-grown orange trees, on which the fruit was parched by the summer heat to the size of a hen's egg. Here also grows the Bean tree or cork-wood (*Erythrina*

Vespertilis,) which attains a diameter of eight or nine inches, with a barrel, (trunk) sometimes of ten feet. The wood is white and very light, (11½ lbs. per cubic foot) and it may be pierced all over with nails without splitting.

The first day's march was to Painta Spring, where the camels were watered. The next water was found on the fifth day, when the beasts were already becoming distressed. From this spring two days' journey brought the party to a break in the range, and the line of march was changed to the south, and the watershed was crossed at eight miles distance. The aspect of the country changed. There was more grass land, and there were indications of a clay subsoil. Crows and kangaroos were seen. The hills were low and stony, and the water channels in the wide valleys trended to the south. Haast's Bluff, known to the natives as Nyurla, was here in sight. It is a range of 2,000 feet in elevation. Glen Helen Station, on the Davenport Creek and about three miles south of Mt. Razorback (1,831 feet high), was reached on the 1st of April. Six miles to the east of Glen Helen is Mt. Sonder, 2,495 feet high, and at its base, where Mr. Tietkins encamped for some days, is a stream, which appears to be one of the sources of the river Finke.

Mr. M'Donald, of Glen Helen, gave the native names of some points, as follows:

Mt. Sonder	*Oorich-ip-ma*	(2d syllable accented.)
Mt. Giles	*Umbat-Thera*	(" ")
Mt. Razorback	*Ooratunda*	(3d " ")
Mt. Zeil	*Wallatrika*	(2d " ")
Redbank Creek	*Oorachilpilla*	(3d " ")

Mr. Tietkins remarks that *Oora* is the native word for *fire*, but that he saw no traces of volcanic rock, or eruptive force. It does not occur to him that *oora* may mean in these names *red*, the color of fire.

He left his camp April 15th, for the unknown west and arrived in ten days at Glen Edith, where he found but three days' supply of water, and set out, with three fast camels, to the southwest, to look for more. When he encamped for the night, twenty miles away, a rain began that lasted four days and five nights.

Glen Edith was discovered by Giles in 1873, and was visited the next year by a party under Mr. Gosse. Mr. Giles marked a tree *Glen Edith*, and the characters were almost illegible. Mr. Gosse had cut GOS, in letters five inches long, on a white gum, and the growth of wood had almost covered the inscription. This overgrowth was cut away, and the letters appeared.

Glen Edith was left May 10th. Next day three of the camels were found to be suffering from the effects of poison; and camp was pitched on a little stream in the Watson Range. From this point the course was west and north-west, over sand-hills covered with *spinifex*, or sand-grass, the hills here, as elsewhere during the journey, being of sandstone. The most northerly point reached was in the range named by Mr. Tietkins *Kintore*, after the Governor of South Australia. The highest peaks, 1,500 feet above the surrounding country, were named Mt. Leisler and Mt. Strickland; and a cairn was erected on the former. Dry as the country was, Mr. Tietkins sprinkled it freely with names.

From Mt. Leisler he saw to the south-west a lake,

which he called *Macdonald*, and his next move was towards it. The north shore was tunnelled in every direction by small black ants.

The water of the lake was salt, and the growth on its shores was spinifex and a salt bush, and in some places oak trees. It took three days' travel to reach the western end of the lake, in about 128° 15′ E. Long., 23° 30′ S. Lat. A range of hills forty miles further west received the name of Baron Ferdinand von Mueller, and then Mr. Tietkins turned eastward to complete the circuit of the lake, to which he gives an extent of 15 miles from east to west, and 10 or 12 miles from north to south.

From this point he followed a direction to the Davenport Hills and thence towards Lake Amadeus, of which, however, he saw nothing until he had climbed the low hills, to which he has given the name of *Long's Range*. From these hills he saw Lake Amadeus extending indefinitely towards the east. He concludes, without having approached its shore, that the lake is a long, narrow channel without any stream of importance running into it from any direction. His homeward route led past Mt. Olga to Mt. Connor, where he turned to the north and then to the east, through a most pleasing pastoral country, entirely unlike the sandy region previously traversed.

Mr. Tietkins was able to map an area of about 14,000 square miles.

British New Guinea.—In Part II, Vol. VIII, of the *Transactions* of the Royal Geographical Society of Australasia (Victorian Branch), Mr. T. H. Hatton-

Richards, Private Secretary to Sir William MacGregor, describes some of his travels in New Guinea in company with his chief, who is sketched with a few happy strokes: "Sir William MacGregor inspires mixed feelings of gratitude and confidence. To the dark man he is an object of daring courage and firm, but silent will. I fear I have often failed in my admiration of the merciful consideration which he evinced towards the angry native, and the patient firmness with which our expeditions were carried out."

Mr. Hatton-Richards is less than just to himself, for his hearers were all impressed by his noble sentiments, and his praise of Sir William.

The travels began in September, 1889, at Cloudy Bay, where the natives looked on the white men with suspicion and, when they had gathered their forces, made an attack "with wonderful skill." The fire-arms put them to flight, with a loss of ten men, killed and wounded.

The expedition was weakened by fever, Sir William MacGregor alone, of 25 men, successfully defying it, and Mr. Hatton-Richards condemns the Cloudy Bay district as unfit for European settlement.

A more important exploration was made in November, 1889—March, 1890, in the Western Division of the Colony. The ascent of the Fly River was part of the plan, and on the 21st November the *Merrie England*, which conveyed the party, anchored at the mouth of the river, near Kiwai Island, where some days were spent. Kiwai is 36 miles long, $2\frac{1}{2}$ miles wide, and only about four feet above high-water. It has a population of about five thousand. Tree Island, marked on the charts to the south-east of Kiwai, is not to be found.

The *Merrie England* drew 14 feet and the channel became too shallow, after she had ascended the river for 51 miles ; so that the voyage was continued in the launch *Ruby*, 550 miles farther. Descending the river to the sea, the party coasted to the south-west, visiting the islands of Saibai and Dauan, where the people live in terror of a piratical tribe, the Tugere, who come from the west. Beyond the Mai Kussa River these people were met with, powerful men, and by far the finest race, Mr. Hatton-Richards says, that he has seen in New Guinea. Their only weapons were bows and arrows, and their canoes were clumsy and had no outriggers. The poles, with which the canoes were propelled, were made of the pedestal of the Sago palm leaf.

An observation showed that the explorers were in Dutch Territory, and they accordingly took their leave of the Tugere. On the return voyage a new river was discovered, in Lat. 9° 10′ S., and Long. 141° 25′ E. At the entrance the river was 200 yards wide and from four to five fathoms deep.

It was ascended for 120 miles, at which point it had narrowed to 15 yards and was obstructed by snags, but the depth of water was three fathoms. The course was very winding and the low banks were overgrown, principally with mangroves ; and alligators abounded.

This river, which has since been named by Sir William MacGregor the "Morehead," is the only stream within British territory to the west of the Fly, where fresh water can be obtained, near the coast.

Mr. Hatton-Richards makes some just remarks in conclusion on the right of the natives in New Guinea to

fair and honorable treatment at the hands of the white man, duly provided, no doubt, with fire-arms.

THE TANNA VOLCANO IN THE NEW HEBRIDES.—In an address before the Victorian Branch of the Royal Geographical Society of Australasia, in November last, Mr. J. W. Lindt described his visit to the New Hebrides in July, 1890. On the way he touched at Noumea, in New Caledonia, which reminded him of the Southern Italian cities, with houses embowered in orange groves; and the natural beauty of the harbor and surrounding country seemed to him second only to that of Sydney. There was but little cultivation around the town, and the farms were more neglected than those of France.

When he arrived at Tanna the volcano was in eruption, with heavy explosions every few minutes, and roars to which the discharge of great guns bore no comparison. Masses of scoriæ were thrown up, and even in daylight the dense, black vapor that followed each outbreak reflected the fire raging in the mountain. The savages came down to the beach to meet Mr. Lindt's party. They are described as the ugliest crowd ever seen, the expression of their faces rendered ferocious with streaks of red and black paint, their manner bold and inquisitive, and their dress disgusting. Their hair was arranged in hundreds of small tufts, six or eight inches long and wound about with thread to within an inch from the tip, which formed a brush. Four of these men were engaged as carriers, and a start was made for the mountain. The road led into a thicket of cotton-wood and then for a mile through a forest, where Mr. Lindt saw for the first time the New Hebrides

banyan tree, with its enormous trunk and masses of aerial roots. All kinds of ferns and orchids thrive on the bark and among the limbs of this banyan, and it is the home of the pigeon and the Siviri or New Hebrides parrot, and the only tree-snake found in the islands lives in its twisted roots.

Beyond the forest was a stretch of sand, and here a shallow lake reflected the cone of the mountain above it. Though the volcano is but 1,150 feet in height, the ascent was difficult, the incline being nowhere less than 40 degrees, and often much more, and the slope covered with scoriæ and sharp-edged masses of obsidian. The vapors that rose with the unceasing explosions had the smell of steam from freshly slaked lime. Arrived at the edge, says Mr. Lindt, "We all gazed awe-struck at the fiery cauldron below. As near as we could judge, the circumference of the crater edge measured from between two and a half to three miles, but there was what might be termed a saddle, which divided the cauldron into two *unequal halves.*" A shameful abuse of power, even for a volcano; but Mr. Lindt goes on: "The larger and more active half was right beneath us, and the smaller basin formed the eastern boundary. On our right, more than 300 feet sheer below us, was a lake of liquid fire, frothing and seething. Every few minutes before an eruption took place the surface of this lake would smoothen like a mirror. Then by degrees the whole face of it would assume a spherical shape, until the pent-up gases below burst the gigantic bubble with irresistible force."

Grouped around the lake were five funnel-shaped pits, varying between 40 and 120 feet in diameter. From the

smaller ones red-hot lava rose unceasingly in jets and columns ; the larger threw out tremendous discharges of lava and scoriæ to a height of 800 or 1,000 feet.

Mr. Lindt's measurement of the volcano—1,150 feet—was accepted and confirmed by Captain Davies, of H. M. S. *Royalist ;* and the height of 600 feet, set down on the chart, appears to be an error.

SWEDISH-AUSTRALASIAN ANTARCTIC EXPLORATION.—Baron Oscar Dickson's offer to defray half the cost of an expedition to the South Polar region under the command of Nordenskiöld, if Australia raised the other half—£5,000—was heartily accepted by the Australasian Scientific Societies last autumn.

It is more easy to begin than to finish such explorations, but there is little doubt that the year 1892 will add memorable contributions to the knowledge of the polar regions, Northern as well as Southern ; and the Australians must look upon this first enterprise as the assertion of their duty and their claim to explore the Antarctic seas as their own peculiar province.

Ten Years in Equatoria and the Return with Emin Pasha, by Major Gaetano Casati.

Translated from the original Italian Manuscript by the Hon. Mrs. J. Randolph Clay, assisted by Mr. I. Walter Savage Landor. With upwards of One Hundred and Fifty Illustrations, Colored Plates, and Four Maps.

2 vols. 8vo. *London and New York*, 1891.

The preface, which is written by Capt. Manfredo Camperio, gives two reasons for the tardy appearance

of this work; the first, that the author's early papers were stolen by King Chua, and the notes they contained had to be written from memory. Brief as it is, Capt. Camperio's preface might be cut down. The praise of Maj. Casati's modesty is out of place in the introduction to his own book, and one sentence* in the work itself could not well be surpassed for boldness by any person of a retiring nature.

The explorer appears to be, none the less, a conscientious and truthful writer, and this integrity of character gives value to the record of his African experience, though the narrative is strangely deficient in charm, even for those who have not lost their interest in the Dark Continent. The book is ill-arranged, and the story rambles back and forth in a confusing manner.

The loss of the notes accounts for much of this confusion, but more is due to the want of a sense of proportion, and Casati is less than just to his own achievements as an explorer.

He deserves also very great credit for his entire freedom from jealousy, his generosity and unselfishness, and his fairness to every man, friend or foe.

In his account of the Return, there is not a trace of exaggeration. Stanley and Emin, the principal figures, are drawn, so to speak, in outline and without attempt at relief or shadow. The rescue and the rebellion are not much more intelligible than they were before Casati wrote, but he has told all he knew, and probably

*"It was a Calvary, but I did not hesitate to ascend it."—*Ten Years in Equatoria, vol. 1, p. 335.*

A similar expression is found in vol. 2, p. 105.

all that ever will be known, about the fall of Emin's government.

The illustrations are like the epigrams of Martial—some good, some not so good, and more of them bad; and the work has suffered in every way by the effort to meet a supposed demand for two volumes.

Longmans' New Atlas, Political and Physical, for the use of Schools and Private Persons. Consisting of 40 Quarto and 16 Octavo Maps and Diagrams, besides Insets and 16 Quarto Plates of Views, etc. Engraved and Lithographed by Edward Stanford. Edited by Geo. G. Chisholm, M. A., B. Sc., Fellow of the Royal Geographical and Statistical Societies.

4to. *London and New York, 1889.*

This Atlas deserves the praise bestowed upon it when it first appeared as "very superior to any of its class yet published in this country" (England); and the comparison may be extended to include the United States.

The physical maps (those confined, that is, to presentation of the physical features alone) are particularly good and clear, with very little of the crowding, hardly to be avoided in the treatment of some subjects, such as the oceanic currents and mountain systems, where these are complicated.

The British Islands naturally receive a great deal of attention, but not more than is demanded in a school Atlas; and the physical maps of England and Wales and Scotland are especially to be commended.

In all the maps the 100 fathom line on the coasts is marked by an uncolored space, and this device, if not entirely pleasing at first, has very decided advantages.

The plates, which present types of the races, characteristic scenes in nature and social life, products of the vegetable kingdom, etc., may have their use, but they seem to be out of place.

OBITUARY.

ANTONIO F. F. DA SILVA PORTO.—The *Gazette du Portugal*, of April 16, from which is taken the portrait here reproduced, describes at length the military and other ceremonies which attended the reception and transfer of Silva Porto's body from the African steamer at Lisbon, to the railway, and the burial at Oporto.

The manner of the explorer's death stirred the national feeling.

It is told that he brooded over the humiliation of his native land by Great Britain, and put an end to his life in a moment of despair.

Silva Porto's name has been familiar for many years to the readers of books of African travel. He was born in 1817 at Oporto, and grew up, almost without education, to the age of twelve years, when he went to seek his fortune in Brazil. After six or eight years' struggle in that country, he passed into Africa and found his way to the District of Bihé, then governed by Maj. Coimbra.